WHAT IS CLAIMED IS:

1. A method for etching trenches in a substrate, comprising the steps of:

securing a wafer to an electrode in a plasma chamber;

heating the wafer to a temperature of greater than 200 degrees Celsius; and

exposing the wafer to a reactive plasma to etch trenches into the substrate of the wafer.

2. The method as recited in claim 1, wherein the step of heating the wafer includes the step of heating the wafer to a temperature of between about 200 and about 450 degrees Celsius.

3. The method as recited in claim 1, wherein the step of heating the wafer includes the step of heating the electrode such that heat is transferred to the wafer to provide the temperature of greater than 200 degrees Celsius.

4. The method as recited in claim 1, wherein the step of heating the wafer includes the step of heating the

electrode such that heat is transferred to the wafer to provide the temperature of greater than 200 degrees Celsius.

5. The method as recited in claim 1, wherein the wafer is secured by clamping and wherein the step of securing the wafer includes the step of applying a backside pressure to the clamped wafer to achieve thermal contact between the wafer and the electrode.

6. The method as recited in claim 1, wherein the step of exposing the wafer to the reactive plasma includes the step of exposing the wafer to a reactive plasma including at least one of Cl_2, HBr, HCl and BCl_3.

7. The method as recited in claim 6, wherein the step of exposing the wafer to the reactive plasma includes the step of exposing the wafer to Ar.

8. The method as recited in claim 1, wherein the step of exposing the wafer to the reactive plasma includes the step of exposing the wafer to additive gases to increase selectivity between an etch mask and the substrate during formation of the trenches.

9. The method as recited in claim 8, wherein the additive gases include at least one of O_2 and N_2.

10. The method as recited in claim 8, wherein the additive gases include O_2 with a flow of between about 6 % to about 40 % of a total gas flow.

11. The method as recited in claim 8, wherein the additive gases include N_2 with a flow of between about 10 % to about 30 % of a total gas flow.

12. The method as recited in claim 1, wherein the step of exposing the wafer to the reactive plasma includes the step exposing the wafer to a gas combination including Cl_2, BCl_3, Ar, O_2, and N_2.

13. The method as recited in claim 1, wherein the step of securing a wafer to an electrode includes securing the wafer in an unclamped state and the step of heating the wafer includes bombarding the wafer with plasma ions to generate heat.

14. A method for etching trenches in a substrate, comprising the steps of:

forming a hardmask on a substrate;

patterning the hardmask;

securing a wafer to an electrode in a plasma chamber;

maintaining the electrode at a temperature of between about 200 and about 450 degrees Celsius to achieve about the same temperature in the wafer; and

exposing the wafer to a reactive plasma to etch trenches into the substrate of the wafer in accordance with the hardmask pattern.

15. The method as recited in claim 14, wherein the wafer is secured by clamping and wherein the step of securing the wafer includes the step of applying a backside pressure to the clamped wafer to achieve thermal contact between the wafer and the electrode.

16. The method as recited in claim 14, wherein the step of exposing the wafer to the reactive plasma includes the step of exposing the wafer to a reactive plasma including at least one of Cl_2, HBr, HCl and BCl_3.

17. The method as recited in claim 16, wherein the step of exposing the wafer to the reactive plasma includes the step of exposing the wafer to Ar.

18. The method as recited in claim 16, wherein the step of exposing the wafer to the reactive plasma includes the step of exposing the wafer to additive gases to increase selectivity between an etch mask and the substrate during formation of the trenches.

19. The method as recited in claim 18, wherein the additive gases include at least one of O_2 and N_2.

20. The method as recited in claim 18, wherein the additive gases include O_2 with a flow of between about 6 % to about 40 % of a total gas flow.

21. The method as recited in claim 18, wherein the additive gases include N_2 with a flow of between about 10 % to about 30 % of a total gas flow.

22. The method as recited in claim 14, wherein the step of exposing the wafer to the reactive plasma includes the step

exposing the wafer to a gas combination including Cl_2, BCl_3, Ar, O_2, and N_2.

23. A method for etching trenches in a substrate, comprising the steps of:

clamping a wafer onto a electrode in a plasma chamber;

maintaining the electrode at an elevated temperature between of about 200 degrees and 450 degrees Celsius;

exposing the wafer to a reactive plasma including Cl_2, BCl_3, Ar, O_2, and N_2;

applying a backside pressure to the clamped wafer using He to achieve thermal contact between the wafer and the electrode such that the wafer is maintained at about the same temperature as the electrode; and

applying a bias power to the wafer electrode to accelerate ions from the plasma to achieve etching of the substrate to form trenches.

24. The method as recited in claim 23, wherein the O_2 includes a flow of between about 6 % to about 40 % of a total gas flow.

25. The method as recited in claim 23, wherein the N_2 includes a flow of between about 10 % to about 30 % of a total gas flow.

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